

CLAIMS

- 1) Gripper provided with air chokes using vacuum suction, capable of transporting various material and objects, characterized in that it is made of a modular structure, which consists of a central profile section core (Fig. 2 and 3) whose dimension is fitted to the size of the piece to be transported, and of profile sections (Fig. 4) fitted in order to be affixed perpendicularly onto this central core, mechanisms for affixing these profile sections at the selected location, ball and socket bearings mounted at the ends of these profile sections (Fig. 7 to 10), air chokes that are affixed to the ends of the ball joints (Fig. 10, 16 and 21) and ball joints that enable an angular clearance of the air chokes.
- 2) Gripper according to claim 1, characterized in that the central core is profiled in such a way so as to make it possible to laterally clamp suction pipes for the air chokes (Fig. 18).
- 3) Gripper according to claim 1 or 2, characterized in that the mechanisms for affixing the profile sections to the central core consist, for each profile section, of an angle bracket (Fig. 6) and a small plate (Fig. 13) that allow the profile sections to become affixed to any position of the central core.
- 4) Gripper according to one of the claims 1 to 3, characterized in that each air choke is supported by a ball joint (Fig. 8) mounted in a ball and socket bearing (Fig. 7), giving the assembly a specified clearance, for example, of 22 degrees, thus making it possible to transport pieces having awkward shapes (Fig. 10).
- 5) Gripper according to one of the claims 1 to 3, characterized in that the air choke is supported by a combined ball joint (Fig. 21) mounted in a ball and socket bearing (Fig. 7), giving the assembly an angular clearance of 30 degrees, and having different lengths that serve as the extension pieces.

6) Gripper according to one of the claims 1 to 5, characterized in that the air choke is supported by a piece in the shape of a ball joint whose axis is mounted with a spring (Fig. 9), and which is mounted in a ball and socket bearing (Fig. 7), giving the assembly an angular clearance of 22 degrees.

7) Gripper according to one of the claims 1 to 6, characterized in that it consists of a ball and socket bearing (Fig. 7) fitted in order to mount the ball joints (Fig. 8) there and of ball joints that are fitted with springs (Fig. 9) as well as combined ball joints (Fig. 27), thus making possible an angular clearance of approximately + 22 degrees in the two first cases, and of 30 degrees in the last case, where their attachment onto the corresponding profile section makes it possible to make the assembly slide until the desired position along the profile section (Fig. 4, 19, 20, 21).

8) Gripper according to one of the claims 1 to 7, characterized in that it consists of extension pieces (Fig. 11) and combined ball joints (Fig. 27) that make it possible for the air chokes to be able to suction by vacuum the pieces whose shapes or differences in height are sizeable.

9) Gripper according to one of the claims 1 to 8, characterized in that it consists of sloped shims (Fig. 12) that make it possible to increase the angle by 15 degrees in one case and 35 degrees in a second case.

10) Gripper according to one of the claims 1 to 9, characterized in that it is fitted in order to be affixed onto a robot or on a mechanized system by means of a manual interface (Fig. 14), fitted in order to allow an effective clamping of the gripper with a large amount of rigidity.

11) Gripper according to one of the claims 1 to 10, characterized in that it is adapted in order to be affixed onto a robot or on a mechanized system by automatic interfaces (Fig. 2, 23, 24 and 25) with a large amount of clamping rigidity.

12) Gripper according to one of the claims 1 to 11, characterized in that it is mounted onto a crosspiece (Fig. 26) that is itself mounted either onto a robot or onto a mechanized system, and that accommodates three interfaces that make it possible to mount a gripper to the center for small pieces to be transported, or to each end for the pieces that have large dimensions.